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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,693	01/03/2006	Hiroaki Koyama	CSP-115-A	8753
21828	7590	07/28/2008	EXAMINER	
CARRIER BLACKMAN AND ASSOCIATES			LIN, KUANG Y	
24101 NOVI ROAD				
SUITE 100				
NOVI, MI 48375				
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			07/28/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/532,693	<b>Applicant(s)</b> KOYAMA ET AL.	
	<b>Examiner</b> Kuang Y. Lin	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6, 10, 14 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6, 10, 14 and 16-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 6, 10, 17-19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060,845 and further in view of JP 10-204,610.

JP '845 shows a method for prolonging service life of the casting die by maintaining the compressive residual stress of a die cavity surface for more than 1000 MPa (see [0003] and [0028]) through a shot-peening and a nitriding process. Thus, JP ,845 substantially shows the invention as claimed except it does not use the nitrosulphurizing process for coating the die surface and does not disclose the surface roughness. However, JP '610 shows to use the nitrosulphurizing process to form a coating layer on the die surface to prevent seizure in a die by forming a dense coating layer having a lubricating effect and a

thermal insulating effect and to improve the service life of the die by forming a nitrided layer containing iron sulfide on the die cavity surface. It would have been obvious to further include the iron sulfide of JP '610 in the nitrided layer of JP '845 by using the nitrosuphurizing process of JP '610 in view of the advantage. With respect to the roughness of the cavity die surface, in [0015] of JP '845 it discloses to perform shot peening before and after the nitriding treatment. Also, in [0025] it further discloses to use carborundum with a diameter of 50-100 micrometers and a injection pressure of 0.3 MPa for peening treatment of the die surface before the nitriding treatment and use glass beads with a diameter of 1-50 micrometers and a injection pressure of 0.4 MPa for peening treatment of die surface after the nitriding treatment. The process parameters of the peening process of JP '845 is similar to that of instant process. Thus, it is expected that the surface roughness of JP '845 will be the same as that of instant application. With respect to claim 3, it is conventional to use chrome molybdenum steel for making casting die as acknowledged by applicant as set forth in [007] of the instant specification. With respect to claim 19, it would have been obvious to obtain the optimal temperature range in the process chamber through routine experimentation.

4. Claims 14, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-060,845 in view of JP 10-204,610 as applied to claim 1 above, and further in view of US 6,546,968 to Nakagawa et al.

Nakagawa et al. discloses that the atmosphere during nitriding treatment, instead of nitrogen gas, can be a nitrogen compound gas such as ammonia gas or the like or hydrogen gas. When the ammonia gas is used, the rate of nitriding reaction can be increased. At this time, by using together such gases as hydrogen, nitrogen, argon or the like, the rate of nitriding reaction can be controlled. Thus, it would have been obvious to further provide the hydrogen gas and ammonia gas of Nakagawa et al. in the nitriding process of JP '845 or nitrosuphurizing process of JP '610 such that to better control the nitriding or nitrosuphurizing reaction.

5. Applicant's arguments filed July 10, 2008 have been fully considered but they are not persuasive.

a. Applicant in page 8, 2<sup>nd</sup> para. of the response stated that persons skilled in the art would not consider it obvious to apply the sulphonitriding treatment of JP '610 forging die to the casting die of JP '845. However, in [005] of the instant specification applicant stated that it is conventional to use sulphonitriding treatment for the casting die. It is a further evidence that it would have been obvious to apply the sulphonitriding treatment of JP '610 to the die casting die.

b. Applicant in page 9, 1<sup>st</sup> para. of the response stated that in contrast to the teaching of JP '845, the claimed invention's surface roughness is made not more than a 16 micron after the first peening step, and not more than 8 micron after the second peening step. However, when comparing the process parameters in [0025] of JP '845 and that of [0047] and [0052] of the instant specification, those

parameters (diameter of the particle, injection pressure, injection time) are about in the same range. Also, like applicant's process, the peening step of JP '845 is also performed prior to and after the nitriding step. Since the compressive stress in the die surface during first peening step is smaller than that in the die surface during second step (since the peening and nitriding increase the compressive stress in the material), it is expected that the deformation of the die surface in the second peening step will be less than in the first peening step. Thus, like the surface roughness of the instant application, the surface roughness of JP '845 will be greater after first peening step as compared to the roughness after the second step.

c. Applicant further stated that in the instant process the shot peening time in the range of 5 to 10 seconds in each of the first and second shot peening treatment which is less than 60 seconds as taught by JP '845. However, in [0047] and [0052] of the instant specification, the peening is applied in the range of 5-10 second **per 5 cm<sup>2</sup>** of the die cavity surface. In JP '845, the total treatment time of 60 seconds is applied to the treating surface having 58 mm in diameter (see [0023], example 1). The total treated area in JP '845 equal to 26.4 (3.14 multiply by (5.8 cm)<sup>2</sup>). Thus, the peening time is about 11 second which is about same as applicant's peening time.

d. Applicant in page 9, 2<sup>nd</sup> para. of the response stated that JP '845 shows a residual stress of less 1000 MPa even after the two shot peening treatments. However, the residual stress depends on the type of material to be treated and

the peening processing parameters which includes particle size, injection pressure and time, type of particle. It would have been obvious to use a stronger material and select an appropriate peening processing parameters to obtain the designated residual stress.

e. Applicant in page 10, 3<sup>rd</sup> paragraph of the response stated that Nakagawa discloses a bond magnet and a method of manufacturing same and such is non-analogous art to the claimed die. However, Nakagawa discloses how the process parameters of nitriding treatment affect the nitriding reaction. There is no reason why the concept of Nakagawa can not be adapted in the nitriding process of JP '845.

6. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 571-272-1179. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica L. Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kuang Y. Lin/  
Primary Examiner, Art Unit 1793

7-18-08